DxMONITOR

Animal Health Report

Inside this Issue

Winter 1993

The DxMONITOR Animal Health Report is distributed quarterly as part of the Veterinary Diagnostic Laboratory Reporting System (VDLRS). The VDLRS is a cooperative effort of the American Association of Veterinary Laboratory Diagnosticians (AAVLD), the United States Animal Health Association (USAHA), and the United States Department of Agriculture, Animal and Plant Health Inspection Service (USDA:APHIS). The purpose of the DxMONITOR is to report trends of confirmed disease diagnoses and animal health data collected from veterinary diagnostic laboratories and the USDA:APHIS.

Caution should be taken when extrapolating information reported in the DxMONITOR due to the inherent biases of submitted specimens. Trends should be interpreted with care. An increase in the number of positive tests for a given diagnosis/agent may be the result of a true increase in prevalence, however, it may only reflect a new State testing requirement, a heightened awareness of the condition, or an increase in the number of laboratories reporting data.

For this issue, the disease reporting period for new data was July 1, 1993 through September 30, 1993. Data have been reported by diagnostic laboratories in the States indicated on the inside back cover, from the National Veterinary Services Laboratories (NVSL), and from the APHIS:Veterinary Services program staffs.

Test results are now presented as percent positive rather than number positive and negative to facilitate comparison among regions. Laboratory reported diseases in Section I are reported as percent of tests. Diseases in Section II are reported as percent of accessions. Increases in denominators may be a reflection of the addition of new labs and/or labs reporting additional diseases not previously reported.

Send all correspondence and address changes to:

USDA:APHIS:VS
DxMONITOR Animal Health Report
555 South Howes, Suite 200
Fort Collins, CO 80521-2586
(303) 490-7800

Lab Notes

This section presents short descriptions of current investigations, outbreaks, or events of potential interest to diagnostic laboratories. The purpose is to provide a forum for timely exchanges of information about veterinary diagnostic laboratory activities. Submissions from nonparticipating laboratories are welcome.

Changes in the DxMONITOR

At the October 1993 meeting of the American Association of Veterinary Laboratory Diagnosticians (AAVLD), the Animal Disease Reporting Committee (ADRC - the planning committee for the DxMONITOR) made the decision, after much discussion, to discontinue the reporting of the agents associated with calf and piglet diarrheas. The committee decided to concentrate efforts on the current investigations and outbreaks of interest to laboratories which are contained in the "Lab Notes," the selected diseases in Section I, the bovine abortion agents in Section II, and the items of potential interest in the "DxNEWS." Porcine Reproductive and Respiratory Syndrome (PRRS) is now included in Section I. All data are presented by State of specimen origin and expressed as positive over the total for the current and previous quarters to allow better spatial and temporal comparisons.

All laboratory reported data are by tests run for Section I and accessions for Section II. The definition of accession for the bovine abortion agents is all submissions of a fetus, fetal tissues, or stillbirths, from all bovine breeds, regardless of etiology. The appendix will continue to present data by the reporting laboratory for the four most recent quarters.

Contact: DxMONITOR, USDA:APHIS:VS, Fort Collins, CO, (303) 490-7863.

Clostridium difficile Associated Disease in Ratites

Clostridium difficile is an agent which can induce a pseudomemoranous colitis and diarrhea during antibio tic treatment in humans and animals. The Texas Veterinary Medical Diagnostic Laboratory recently examined colon contents of ratites for *C. difficile* toxins by exposing *in vitro* cultured cells to the content and by neutralizing any observed toxic effect by *C. difficile* antisera.

High levels of C. difficile toxins have been identified in the large intestine of eleven ratite cases. The toxins were present in the cecum/colon, but not in the small intestines. The birds were 1 to 4 weeks of age and experienced an acute diarrhea with wattery, hyperboluminus cecum and colon content, and occasionsl bloody stools. In some cases, the only visible symptom was that birds appeared droopy and died within hours. The lesions in the colon were of an acute nature (edema, congestion, and necrosis); typical pseudomembranes were not observed. The bacterial flora in nine of the eleven cases consisted of "pure culture" of *E. coli* or *Clostridium perfringens* and, in two cases, of mixtures of various enteric bacteria. Antibiotic treatment history included in two cases LS-50 (Lincocin/Spectinomycin) orally for the first 7 days of life and, in two additional cases, neomycin daily since birth; treatment status was unknown in the remaining seven cases.

The clinical spectrum in human patients with *C. difficile*-associated disease ranges from a mild diarrhea to a fulminant pancolitis. Approximately 90 percent of patients have a clear, watery diarrhea and ten percent have a bloody, diarrheic stool. Healthy adults and children can carry *C. difficile*. The carrier rate ranges from two percent in Sweden to 15 percent in Japan. Healthy neonates and young children have a carrier rate from zero to 63 percent. This wide range is probably due to different levels of environmental exposure in nurseries, day care centers, or hospitals. *C. difficile* is a common nosocomial pathogen which infects 15 to 25 percent of hospitalized patients. These patients frequently have no history of antibiotic treatment.

There is very little information regarding *C. difficile*-associated diseases in ratites, and it is speculative to apply disease information across different species. Nevertheless, it is clear that ratites can harbor a toxin in the colonic content which is destructive to mammalian cells and which can be neutralized by specific *C. difficile* antisera. It is interesting to note that toxins were found in young birds and that some had received prior antibiotic therapy. This disease condition needs to be studied further, and veterinarians should be alert to this potential problem when prescribing antibiotics.

Contact: Texas Veterinary Medical Diagnostic Laboratory, College Station, TX, (409) 845-3414.

Immunohistochemical Detection of *Tritrichomonas foetus* in Formalin-Fixed Bovine Fetal, Placental, and Uterine Tissues

An immunohistochemical staining technique was evaluated at the National Veterinary Services Laboratories as a diagnostic and research tool to specifically label *T. foetus* organisms in formalin-fixed, paraffin-embedded tissue sections. With conventional stains, trichomonads are discernable in tissue sections if present in large numbers. However, they are easily confused with leukocytes or placental chorionic stromal cells and are hard to identify in tissues with abundant exudate. The technique used in this study employed a monoclonal antibody previously developed against *T. foetus* and a commercially-labeled streptavidin biotin system.

The evaluation was performed through collaboration with the Montana State University, the Montana Veterinary Diagnostic Laboratory, and the University of Nevada. Case material was also provided by these institutions. The monoclonal antibody labeled *T. foetus* organisms in fetal, placental, and uterine tissues of twelve positive cases, but failed to label tissues from fetuses aborted due to different causes.

Results of this study demonstrate the usefulness of immunohistochemistry, confirmed tissue invasion by *T. foetus* in placental and fetal tissues, and suggested that the organism has the ability to invade uterine glandular epithelium.

Contact: Dr. Jack Rhyan, Pathobiology Laboratory, National Veterinary Services Laboratories, Ames, IA, (515) 239-8521.

Eperythrozoonosis

Several cases of eperythrozoonosis in swine were diagnosed in nursing and nursery pigs during August and September by the South Dakota Animal Disease Research and Diagnostic Laboratory. Clinical signs ranged from dyspnea to anemia. Typical hemoparasites were identified in blood smears from affected pigs. Porcine Reproductive and Respiratory Syndrome virus infection was also identified in one of these herds. Diagnosis of infections with *Eperythrozoon suis* depends on identification of typical organisms in blood smears. Organisms will detach from erythrocytes on mail-in tube samples, so submission of blood smears or live animals is necessary for diagnosis.

Contact: Dr. Dale Miskimins, South Dakota Animal Disease Research and Diagnostic Laboratory, Brookings, SD, (605) 688-5171.

Weak Calf Syndrome

In April of 1993, producers, diagnosticians, and the media began to speculate on the possibility of increased death losses in beef calves due to "weak calf syndrome." The syndrome is loosely defined as two scenarios: 1) calves which die without ever getting up and nursing, despite good mothering of the dam and 2) calves which are born normally, are vigorous, and nurse, only to fade and die in the first three days of life. Diagnosticians have associated a number of infectious agents with these calves, but a common thread with regard to infectious agents seems to be lacking. Many have suggested a link with nutrition and weather. The scope of the problem has been difficult to define. Anecdotal evidence indicates that the distribution of the problem is spotty, with some States affected more severely than others. The overall effect on the total calf crop is unknown.

The USDA:APHIS:VS National Animal Health Monitoring System (NAHMS) staff collaborated with the USDA:National Agricultural Statistics Service (NASS) to analyze existing data on calf death loss. In July of 1992 and July of 1993, some of the largest producers (both beef and dairy) in each of the 48 contiguous States were asked about deaths in calves less than 500 pounds during the preceding 6 months (January through June). Of the 723 producers reporting some deaths in either year, 534 reported some deaths both years, 135 reported deaths only in 1993, and 54 reported deaths only in 1992. Overall, the ratio of reported deaths for 1993 to reported deaths for 1992 was 1.41, indicating that there was a 41 percent increase in calf deaths in 1993 over 1992 for these producers.

Producers Reporting Calf Deaths

Reporting deaths in both 1992 and 1993	534
Reporting deaths in 1992 only	54
Reporting deaths in 1993 only	135
Total reporting deaths in either 1992 or 1993	723

From this information it would appear that there was indeed an increase in calf deaths in the first 6 months of 1993, on larger operations across the U.S. In evaluating earlier information collected from laboratories participating in the Veterinary Diagnostic Laboratory Reporting System, there is no evidence

that this increased death loss is associated with the emergence of a new disease agent. The evidence, instead, is associated with an increased incidence of many of the common calfhood diseases exacerbated by nutritional and climatic conditions last winter and spring.

Contact: Dr. David Dargatz, USDA:APHIS:VS, Fort Collins, CO, (303) 490-7855.

I. Patterns of Selected Diseases

Section I contains information on diseases of interest as designated by List B of the Office International des Epizooties (OIE). The purpose of reporting these data is to monitor confirmed cases of specific diseases on a State-by-State or regional basis so that national distributions can be mapped and evaluated.

Key to Figures in this Section:

- **The percents positive presented here are the number of positive tests out of the total number of tests run and should not be interpreted as disease prevalence or incidence rates.**
- **In some cases, the denominator is a minimum because some laboratories were not able to determine the total number of negative tests performed.**
- **Data are presented by region or State of specimen origin and quarter year of specimen submission.**
- **Results reported with dates not corresponding to the current quarter are the result of different testing intervals or related to different reporting times.**
- **See map on inside back cover for regions.**

☐ Bovine Leukosis

Criteria: AGID or pathology.

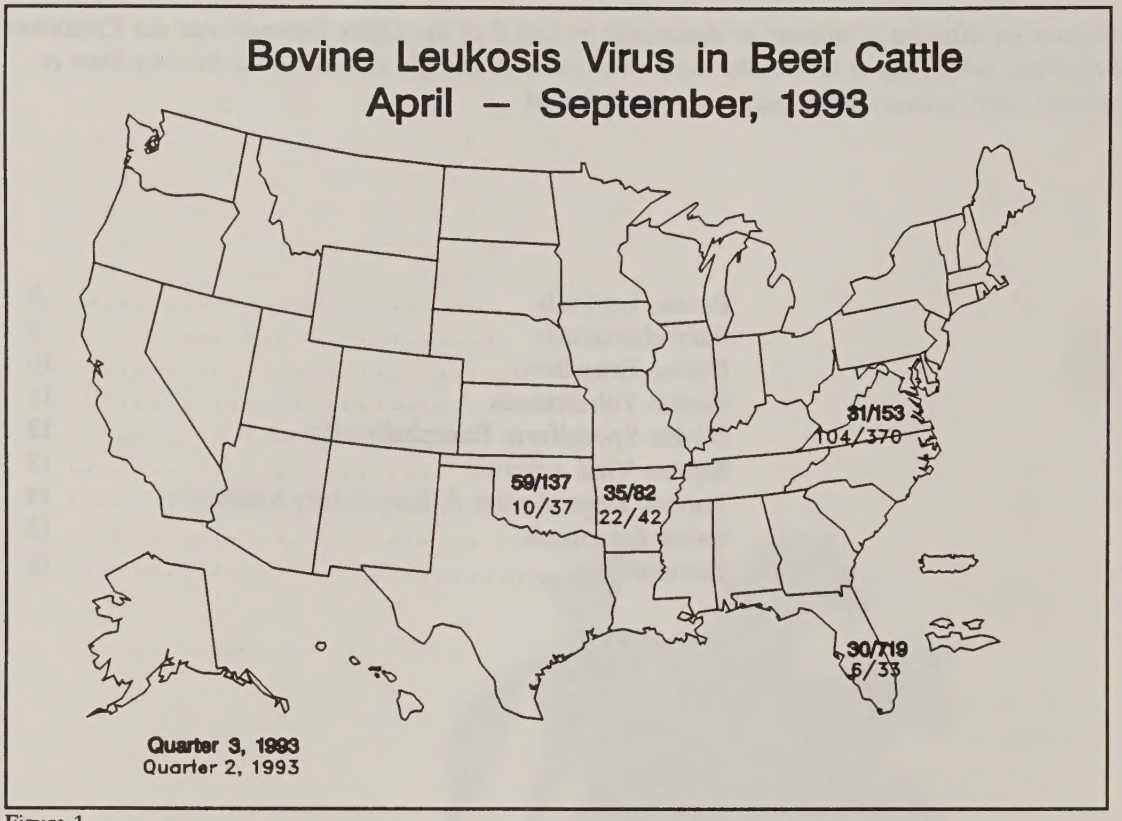

Figure 1

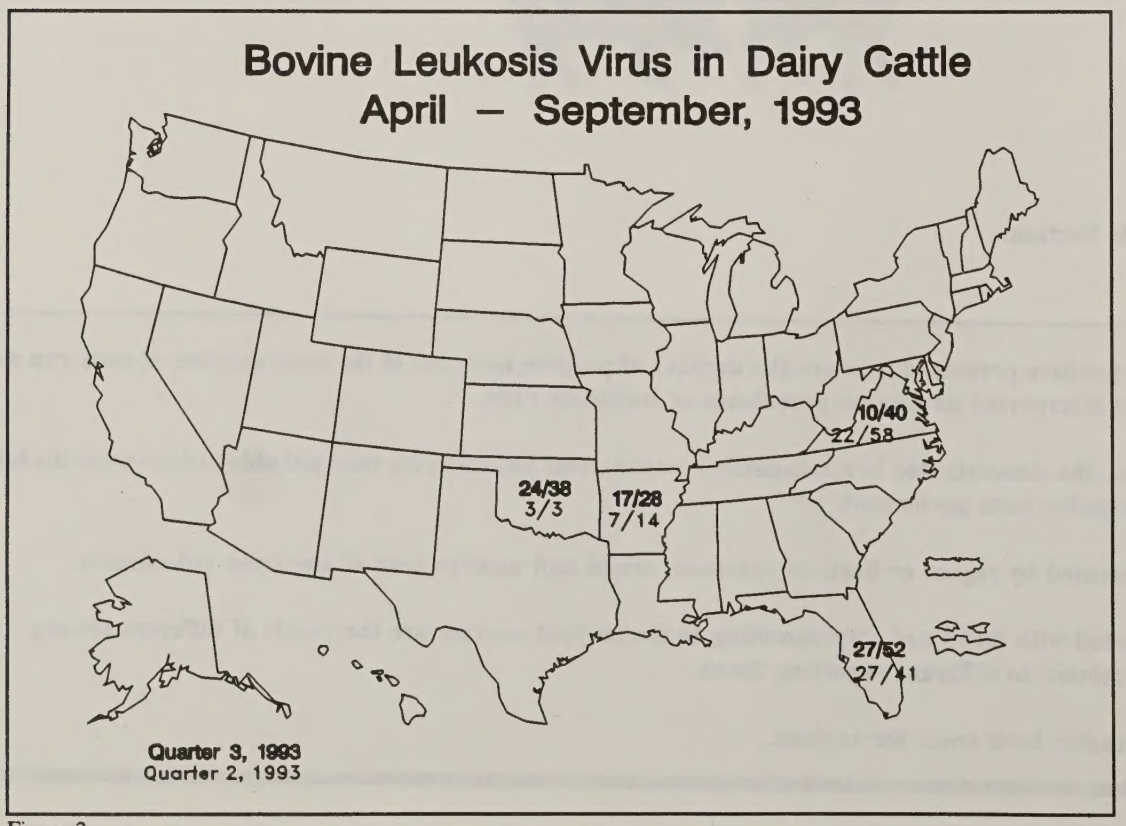

Figure 2

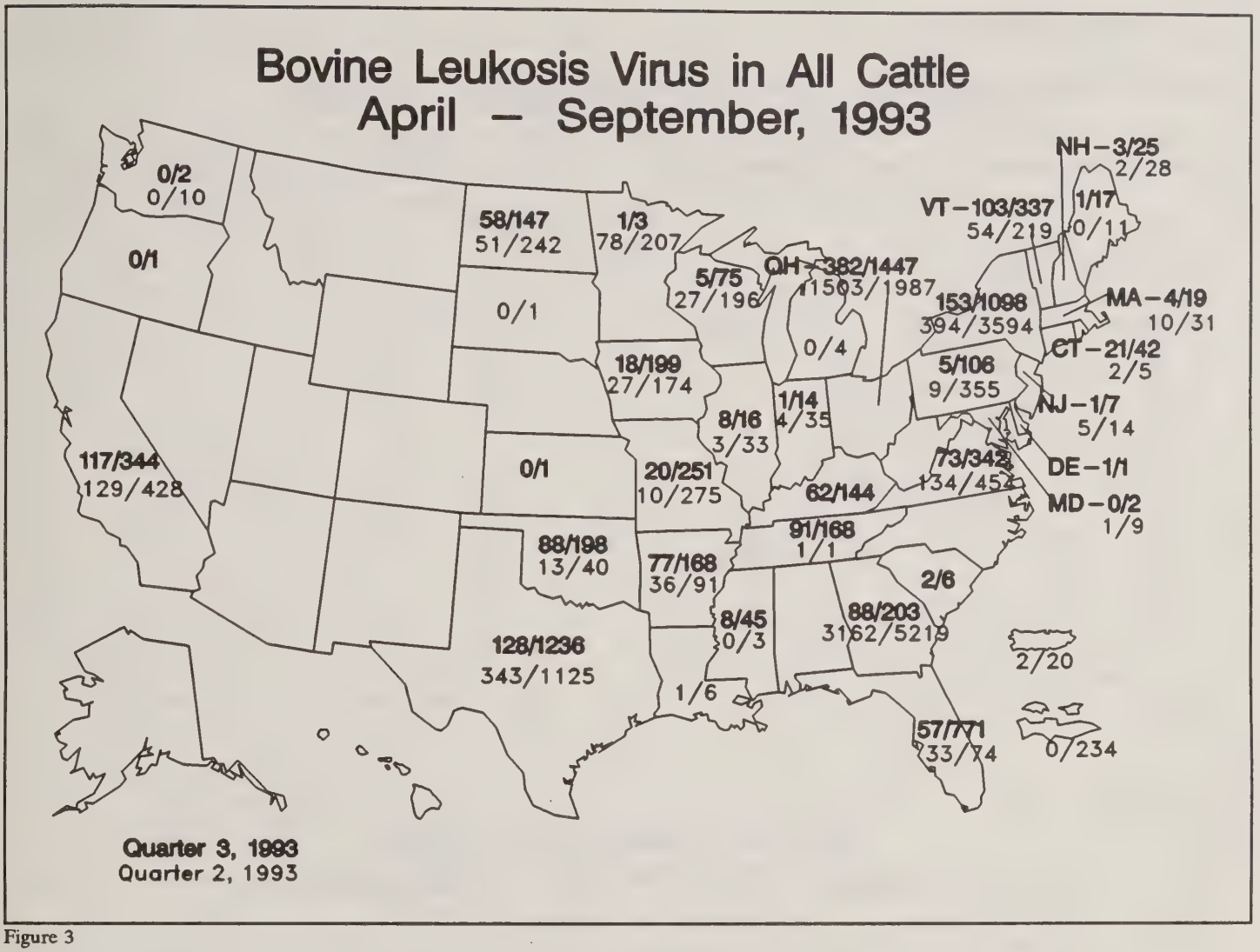

Figure 3

For the third quarter of 1993 (July through September), there were 1,576/7,435 (21.2 percent) positive tests for BLV compared to 5,034/15,125 (33.3 percent) for the second quarter of 1993 and 1,892/7,884 (24.0 percent) for the third quarter of 1992. Figures 1 through 3 show the distribution of BLV test results for the second and third quarters of 1993 in beef, dairy, and all cattle by State. Figure 4 shows a comparison of the total percent positive by quarter.

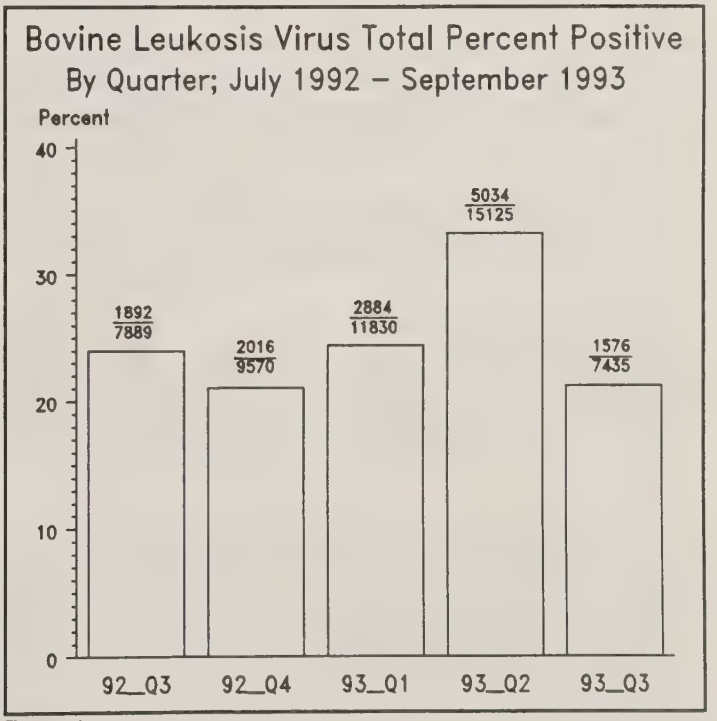

Figure 4

☐ Paratuberculosis

Criteria: Culture, histopathology, DNA probe, AGID, ELISA, or CF.

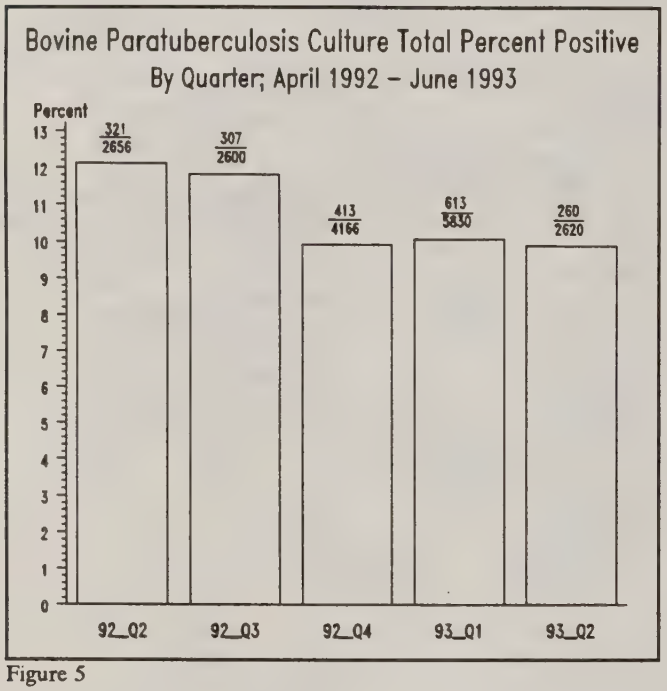

Figure 5

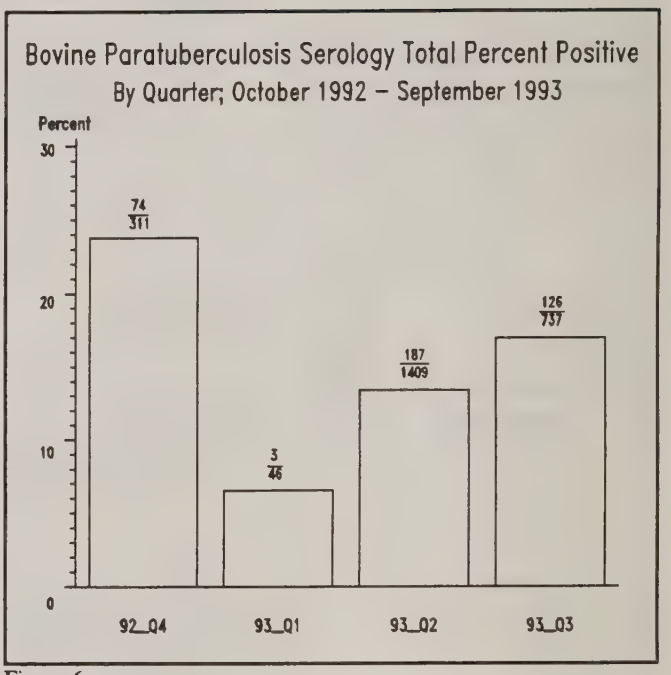

Figure 6

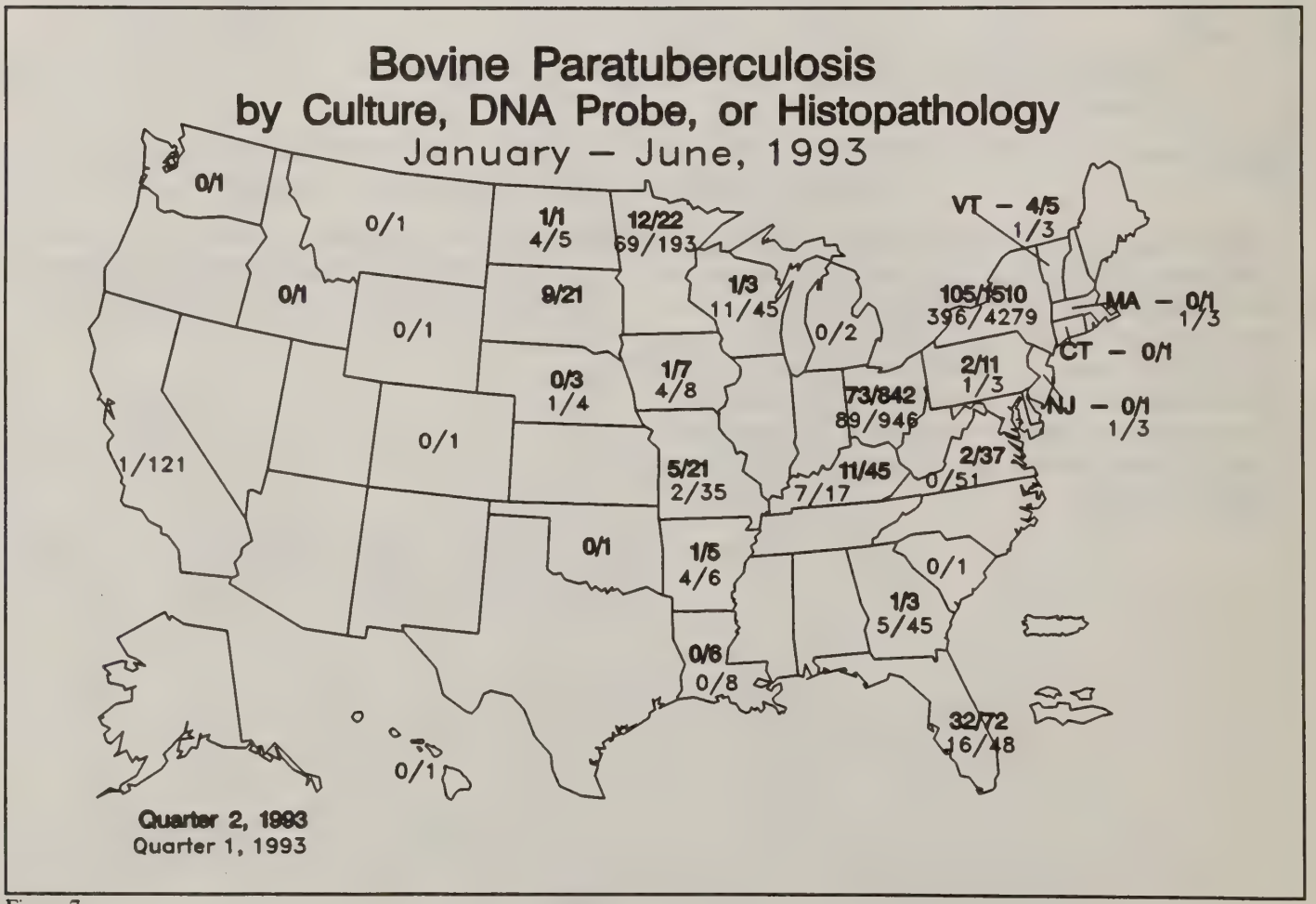

Figure 7

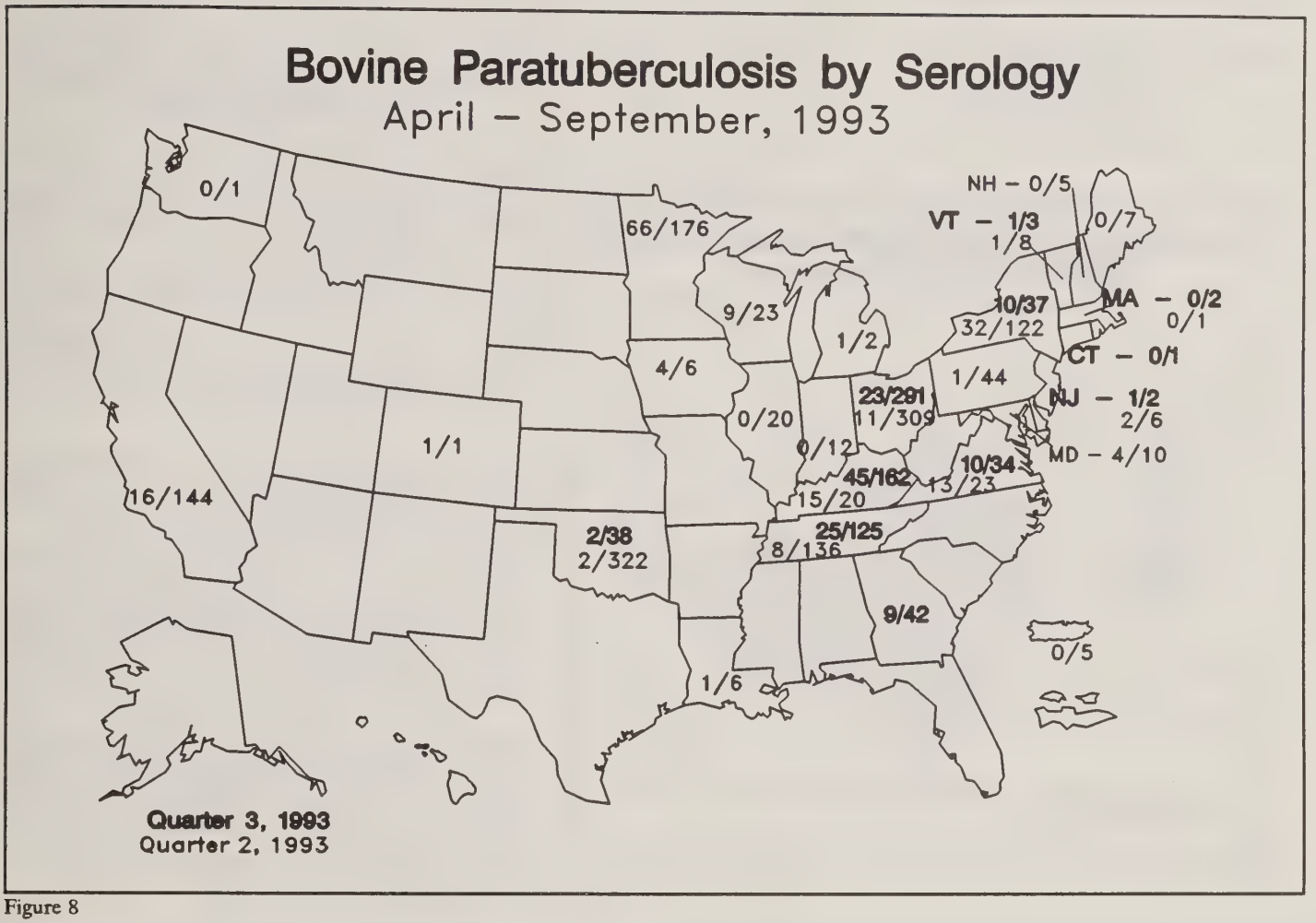

Figure 8

Beginning with Quarter 4, 1992, paratuberculosis results were accepted for culture or serology. Prior to Quarter 4, 1992, results were reported for culture only. Quarter 3, 1993 results are serology only.

The percent positive for culture, DNA probe and histopathology was less for the second quarter of 1993 than for the first quarter of 1993 (260/2,620, 9.9 percent and 613/5,830, 10.5 percent, respectively) for bovine paratuberculosis (Figure 5). The percent positive for serology was greater for the third quarter of 1993 than for the second quarter of 1993 (126/737, 17.1 percent and 187/1,409, 13.3 percent, respectively) for bovine paratuberculosis (Figure 6).

Figure 7 shows the DNA probe, histopathology and culture results for bovine paratuberculosis for the first and second quarters of 1993 by State. Figure 8 shows the serology results for bovine paratuberculosis for the second and third quarters of 1993 by State.

For the second quarter of 1993, one out eleven caprine paratuberculosis culture, DNA probe, and histopathology tests was positive (9.1 percent). Tests were conducted on specimens from Georgia (1), Florida (2), Maine (1), Minnesota (3), New York (2), and Ohio (2), with the positive result occurring in Florida. For the third quarter of 1993, zero out of eight serology tests was positive. Tests were conducted on specimens from Illinois (2), Maryland (2), Massachusetts (2), Pennsylvania (1), and Vermont (1).

For the second quarter of 1993, one out of sixteen ovine paratuberculosis culture, DNA probe, and histopathology tests was positive (6.3 percent). Tests were conducted on specimens from Massachusetts (1), Minnesota (2), New York (7), Ohio (5), and South Dakota (1), with the positive result occurring in South Dakota. For the third quarter of 1993, one out of four serology tests was positive (25.0 percent). Tests were conducted on specimens from New York (4).

☐ Bovine Brucellosis

Source: Dr. Mike Gilsdorf
USDA:APHIS:VS
Cattle Diseases Staff
(301) 436-4918

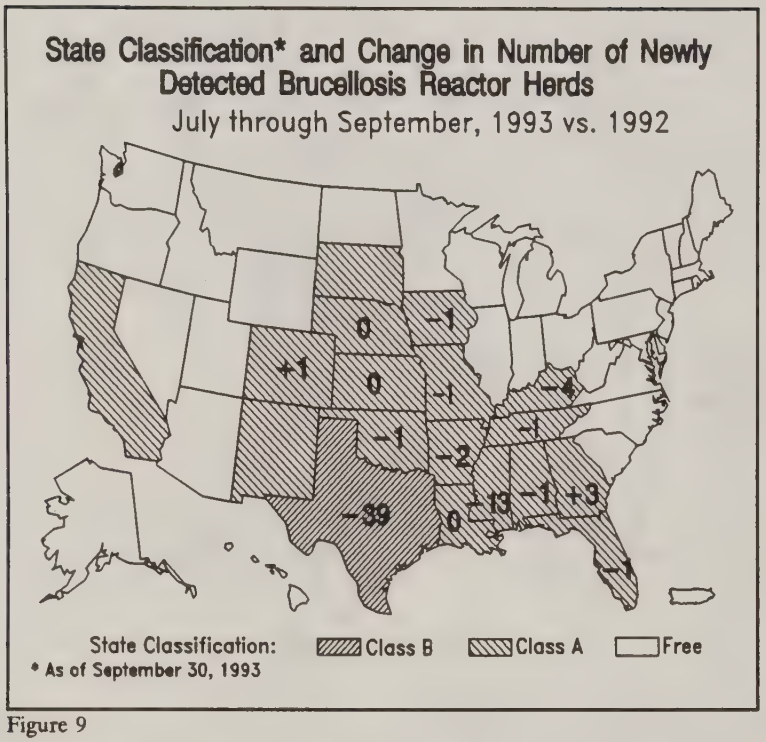

Figure 9

Reactor herd = Herd with at least one case of brucellosis confirmed by serology or culture.

Definition of State Classifications:

Class B: More than 0.25 percent, but less than 1.5 percent of all herds infected.

Class A: No more than 0.25 percent of all herds infected.

Free: No infected herds under quarantine during the past 12 months.

Through September 30, 1993, there were no State classification changes for bovine brucellosis. Georgia and Colorado had increased numbers of newly detected herds, while Oklahoma, Texas, Iowa, Arkansas, Alabama, Missouri, Mississippi, Kentucky, Florida, and Tennessee had decreased numbers (Figure 9).

For the entire U.S., there were 55 newly detected reactor herds from July through September 1993 (Figure 10); 50 fewer herds than were newly identified from April to June 1993. Only Texas had more than 10 newly detected brucellosis reactor herds during the quarter.

There were fewer brucellosis reactor herds detected in the third quarter of 1993 than during the same quarter of 1992. The rate of detection has dropped in Texas over the last five quarters. The general trend for the remaining States has been decreasing since 1990 (Figure 11).

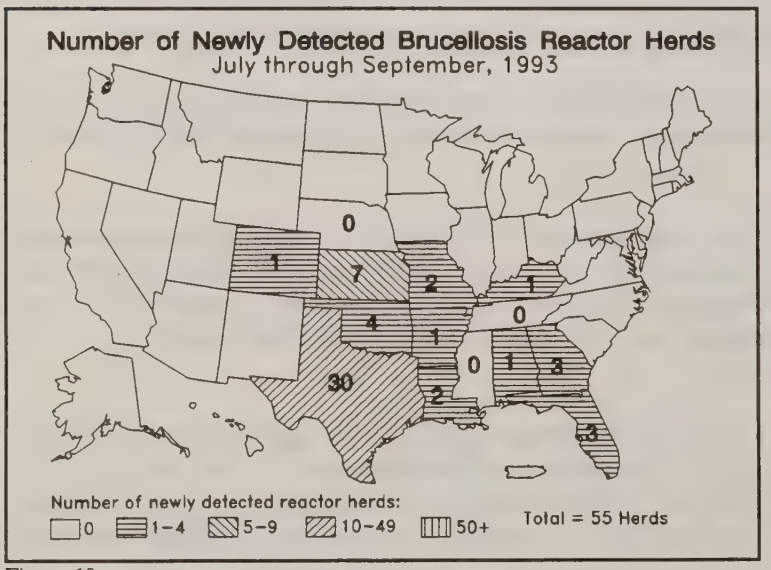

Figure 10

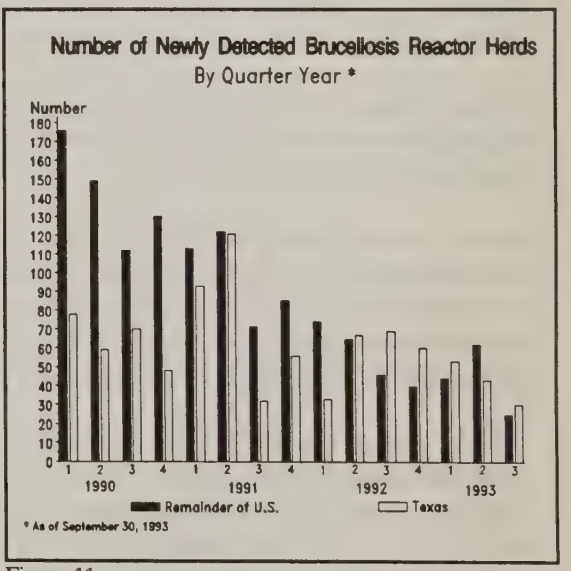

Figure 11

☐ Bovine Tuberculosis

Source: Dr. J.S. VanTiem
USDA:APHIS:VS
Cattle Diseases Staff
(301) 436-8715

Infected = Laboratory confirmed existence of *Mycobacterium bovis*.

Exposed = Animals directly associated with infected animals.

State Classifications:

Modified Accredited: Testing and Slaughter Surveillance programs in effect.

Accredited Free: Testing and Slaughter Surveillance programs have identified no infected bovines for five or more years.

Twelve herds of cattle and/or bison were known to be infected with bovine tuberculosis as of September 30, 1993 (Figure 20). Four new herds have been identified since June 30, 1993. There are currently nine modified accredited States plus Puerto Rico. The remaining States and the Virgin Islands are accredited free.

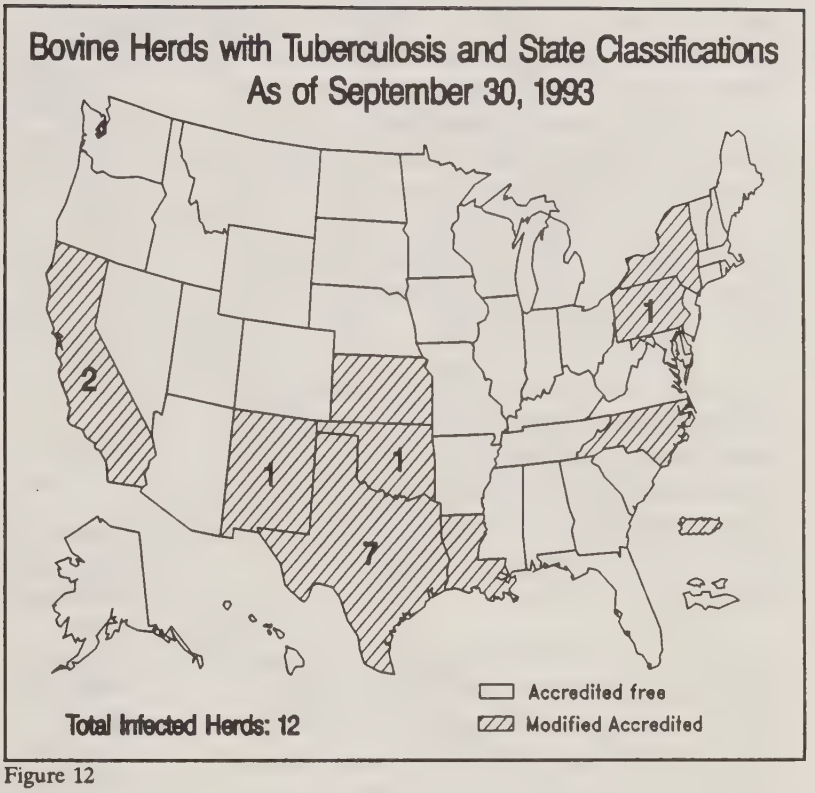

Figure 12

Thirteen captive cervid herds were known to be infected with bovine tuberculosis as of September 30, 1993 (Figure 21); seven more than the previous quarter.

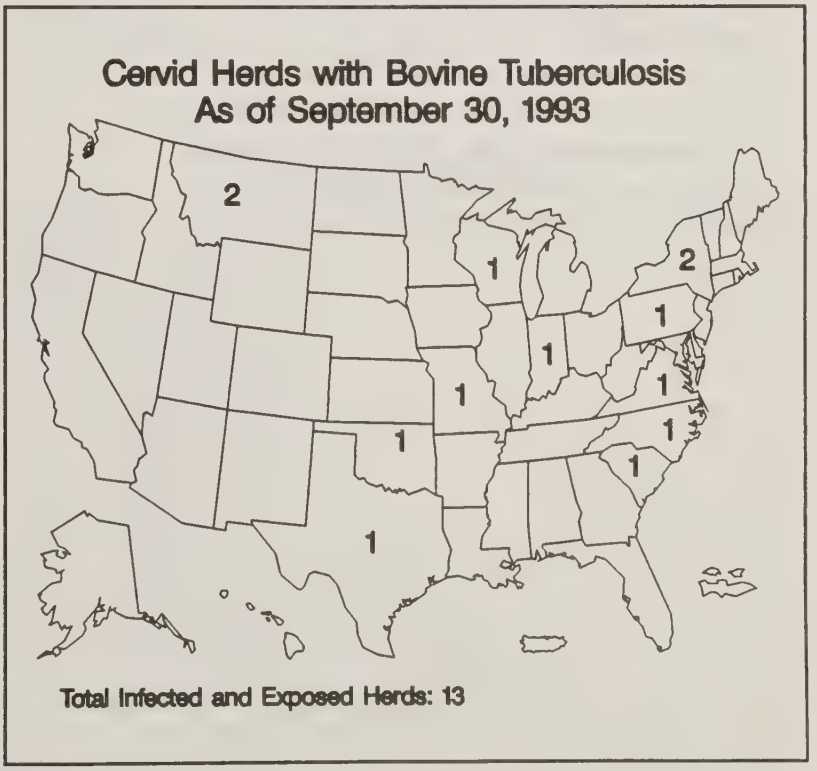

Figure 13

☐ Bovine Spongiform Encephalopathy (BSE)

Sources: Dr. G.O.Denny, Northern Ireland
Dr. A. Doherty, Republic of Ireland
Dr. B. Hornlimann, Switzerland
Dr. J. Wilesmith, Great Britain

As of December 3, 1993, Great Britain had 8,858 newly confirmed cases of BSE with 1,460 more herds affected. About 48.3 percent (up from 46.5) of the dairy herds and 11.5 percent (up from 10.3) of the beef suckler herds in Great Britain have been affected (Table 1). Dr. Wilesmith reports that the weekly reporting rate in Great Britain is down by 150-200 cases per week compared with the same weeks last year (Figure 14).

In the last three months, 99 additional confirmed cases of BSE have been reported from Northern Ireland, while the Republic of Ireland and Switzerland have had six and eleven cases respectively. Canada and Portugal identified one case each, both cases were imported (Table 2).

A total of 1,304 U.S. bovine brain specimens had been examined for BSE as of November 30, 1993. The CDC examined 163, NVSL examined 665, and various veterinary diagnostic laboratories examined 476. To date, no evidence of BSE has been found in any U.S. cattle (Figure 15).

Bovine Spongiform Encephalopathy
Descriptive Epidemiological Statistics for Great Britain*
As of December 3, 1993

Total number of confirmed cases:	113,275
Total number of affected herds:	28,344
Proportion of dairy herds affected:	48.3%
Proportion of beef suckler herds affected:	11.5%

* England, Scotland, and Wales

Table 1

Other Countries Affected by BSE

Country	Imported Cases	Native Cattle	No. of Cases	Date of Last Report
Northern Ireland	Yes	Yes	1041	1 Dec 93
Republic of Ireland	Yes	Yes	80	1 Dec 93
Switzerland	No	Yes	53	1 Dec 93
France	No	Yes	6	13 Sept 93
Canada	Yes	No	1	15 Dec 93
Portugal	Yes	No	1	5 Nov 93
Oman	Yes	No	2	31 Jul 92
Denmark	Yes	No	1	10 Aug 92
Falkland Islands	Yes	No	1	4 Sep 92

Table 2

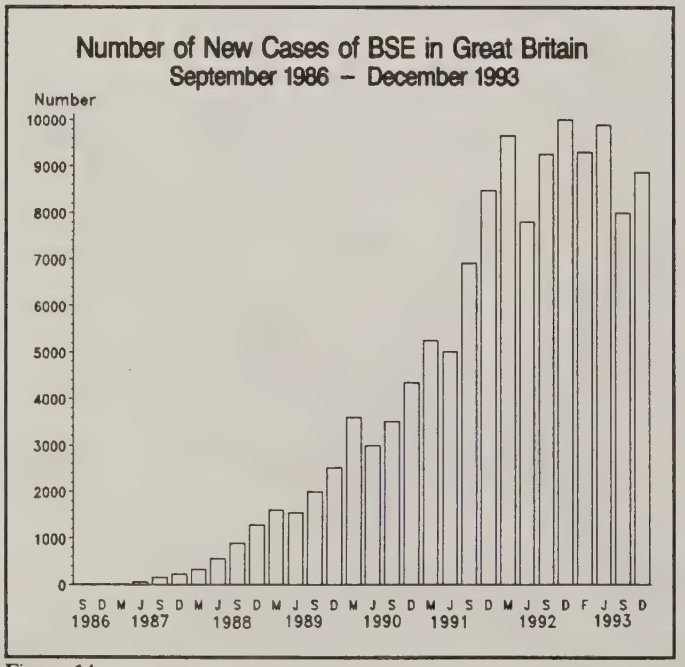

Figure 14

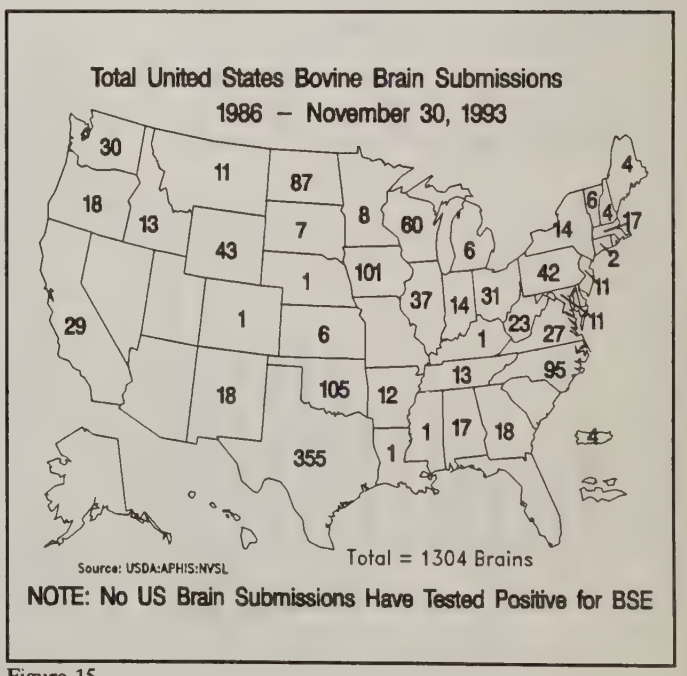

Figure 15

☐ Equine Viral Arteritis

Criteria: Virus neutralization (>1:4 titer) and no history of vaccination, or virus isolation (tissue or semen).

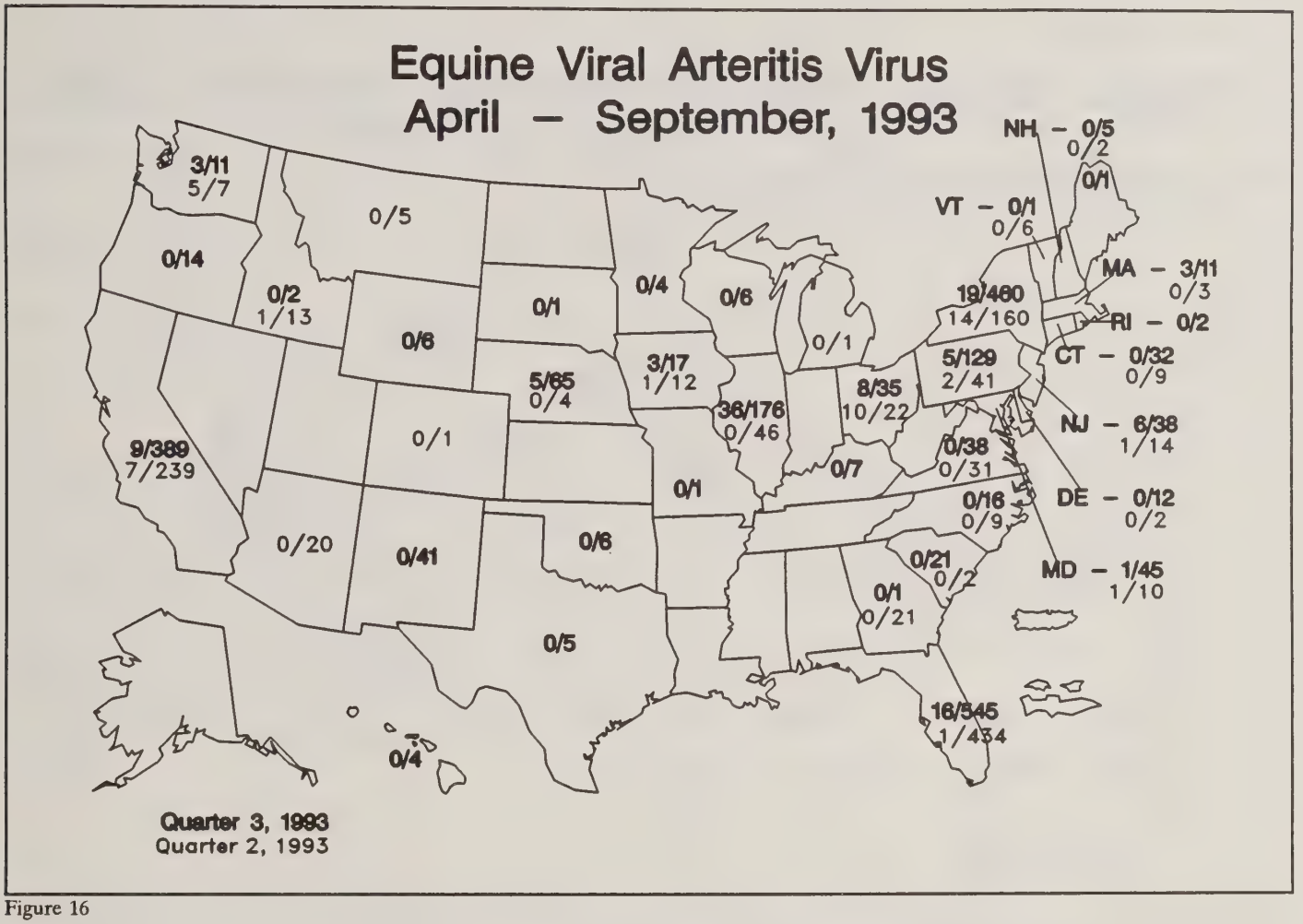

Figure 16

For all regions combined, 114 positive tests (5.3 percent of the 2,147 tests) for equine viral arteritis were reported for the third quarter of 1993 (Figure 16). This is an increase in percent positive from the previous quarter (44 out of 1,114, 4.0 percent) and is greater than the third quarter of 1992 (152 out of 8,731, 1.7 percent; Figure 17).

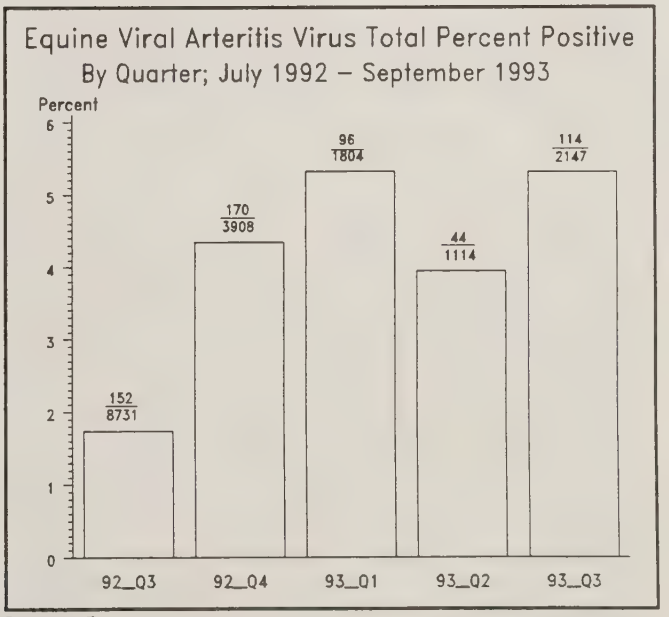

Figure 17

☐ Porcine Reproductive and Respiratory Syndrome (PRRS)

Criteria: Virus isolation or antibody detection by indirect fluorescent antibody.

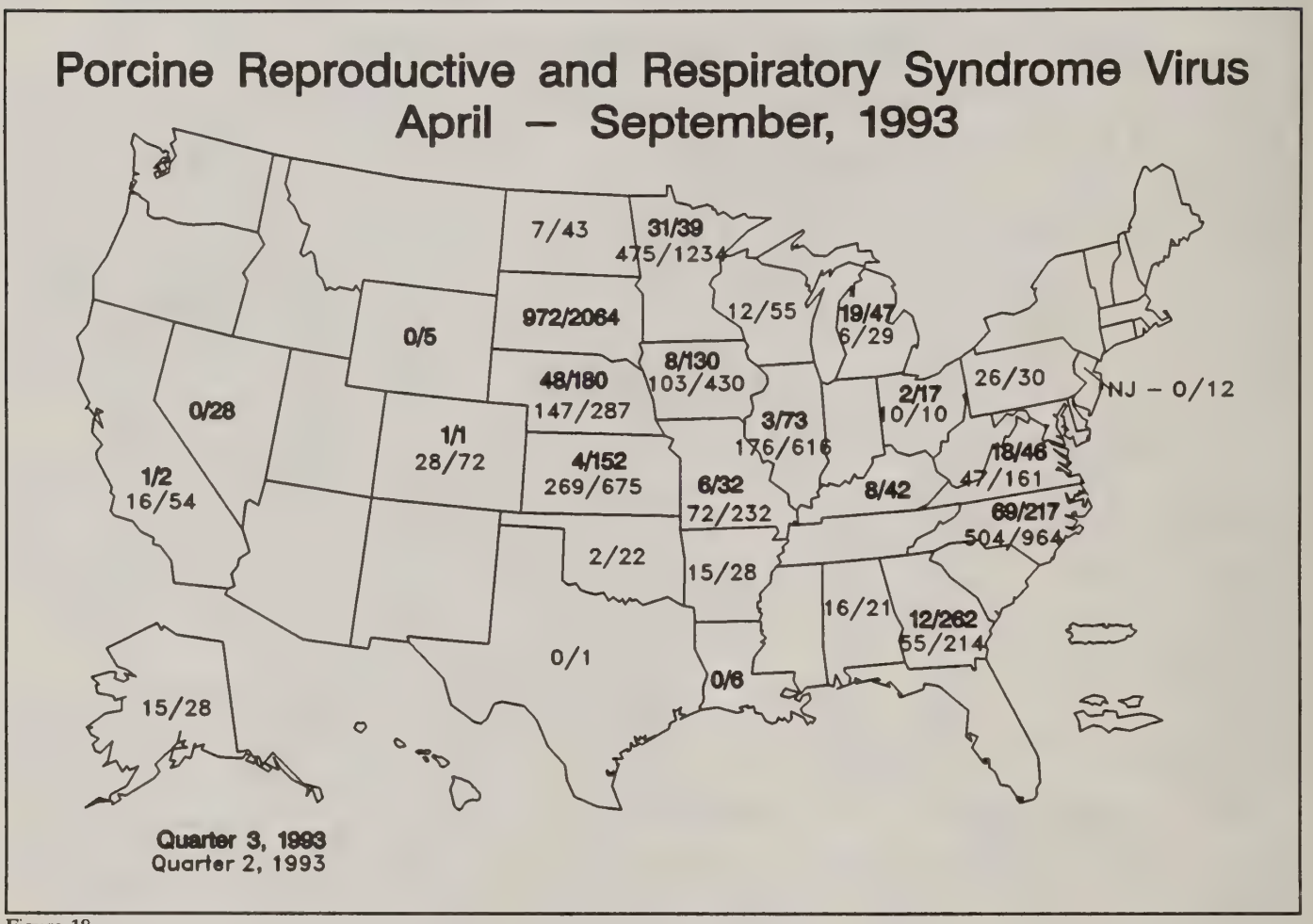

Figure 18

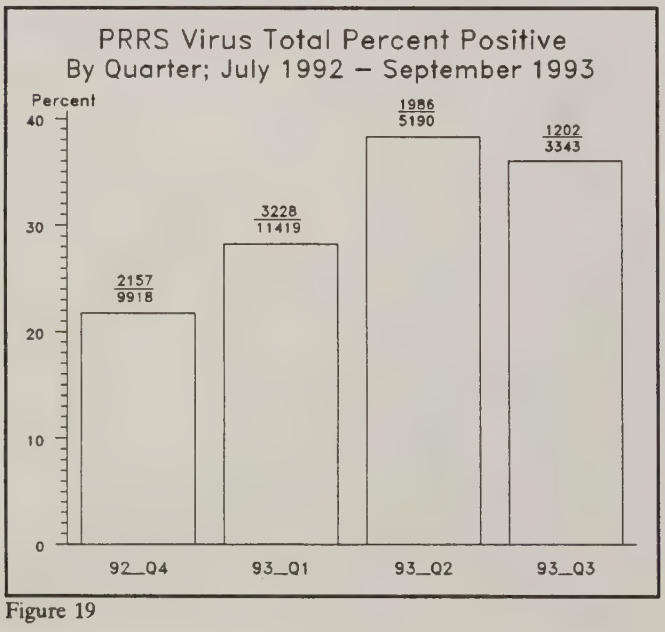

Figure 19

Data on PRRS have been collected from participating laboratories for three quarters and NVSL for four quarters. Figure 18 shows the test results for quarters two and three 1993 by State. Overall, 1,202/3,343 (36.0 percent) tests were positive for the third quarter of 1993 compared to 1,986/5,190 (38.3 percent) for quarter two 1993 (Figure 19).

☐ Swine Brucellosis

Source: Dr. Delorias Lenard
USDA:APHIS:VS
Swine Health Staff
(301) 426-7767

State Classifications:

Stage 1: Organization
(Surveillance and traceback begun.)

Stage 2: ≥ 10 percent Surveillance/year. ≥ 80 percent of tracebacks successful.

Stage 3: Validated Free
(≥ 5 percent Surveillance/year. ≥ 80 percent of tracebacks successful.

Kansas and New Jersey changed from Stage 2 to Stage 3 between July and September, 1993. The 12 swine herds found to be infected with brucellosis during the third quarter of 1993 were five fewer than during the second quarter of 1993 (Figure 20) and 94 less than the third quarter of 1992. The number of newly detected herds from the second quarter increased from five to six in Texas. One newly detected herd was found in Hawaii, the first since 1991.

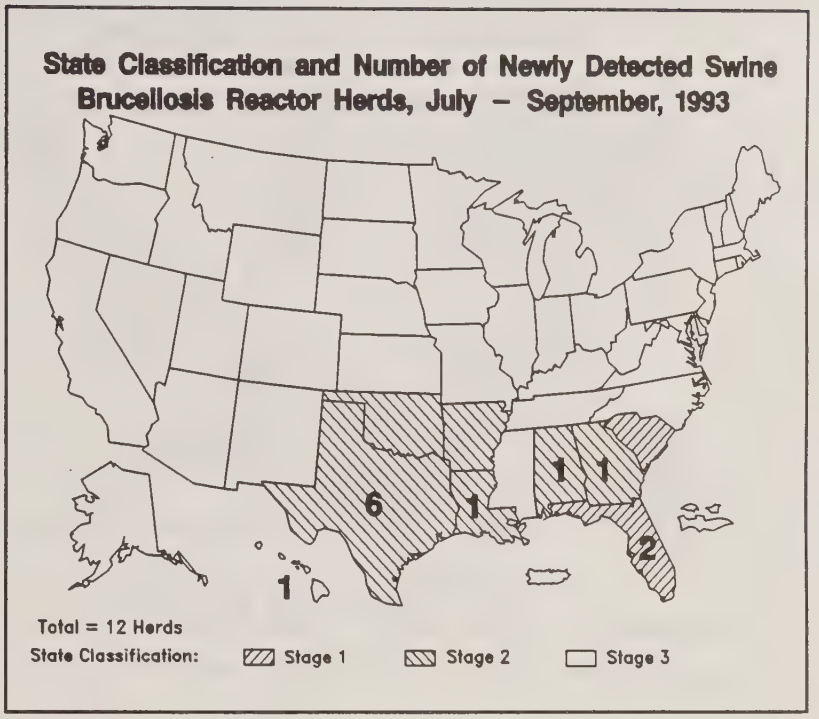

Figure 20

There were 37 quarantined herds as of September 30, 1993 (Figure 21). The total number of quarantined herds has decreased steadily since the second quarter of 1991 (77 quarantined herds). Texas decreased from 16 in the second quarter of 1993 to 10 in the third quarter. Florida decreased from 25 in the second quarter to 20 in the third quarter.

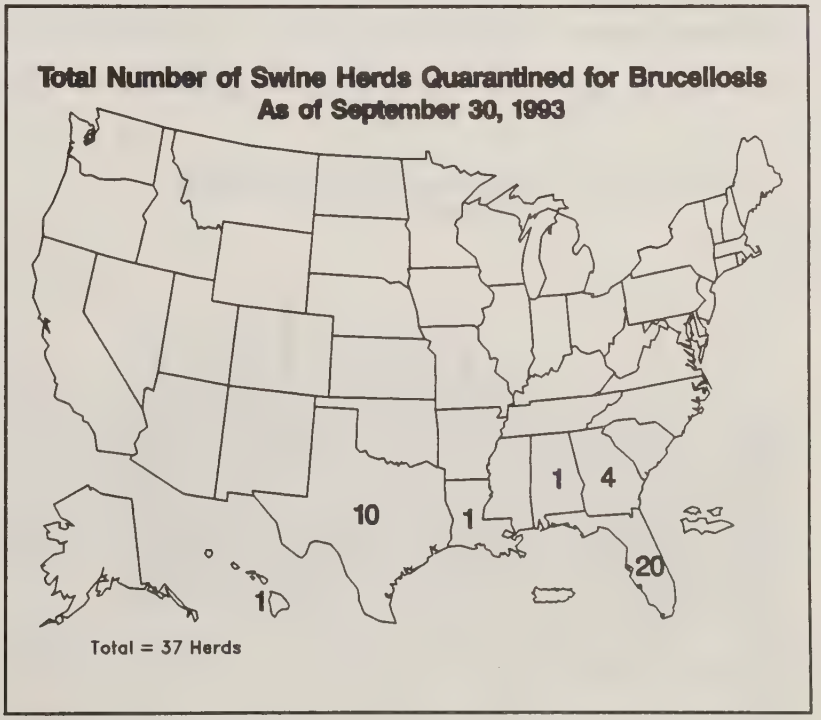

Figure 21

☐ Pseudorabies (PR)

Source: Dr. Joe Annelli
USDA:APHIS:VS
Swine Health Staff
(301) 436-7767

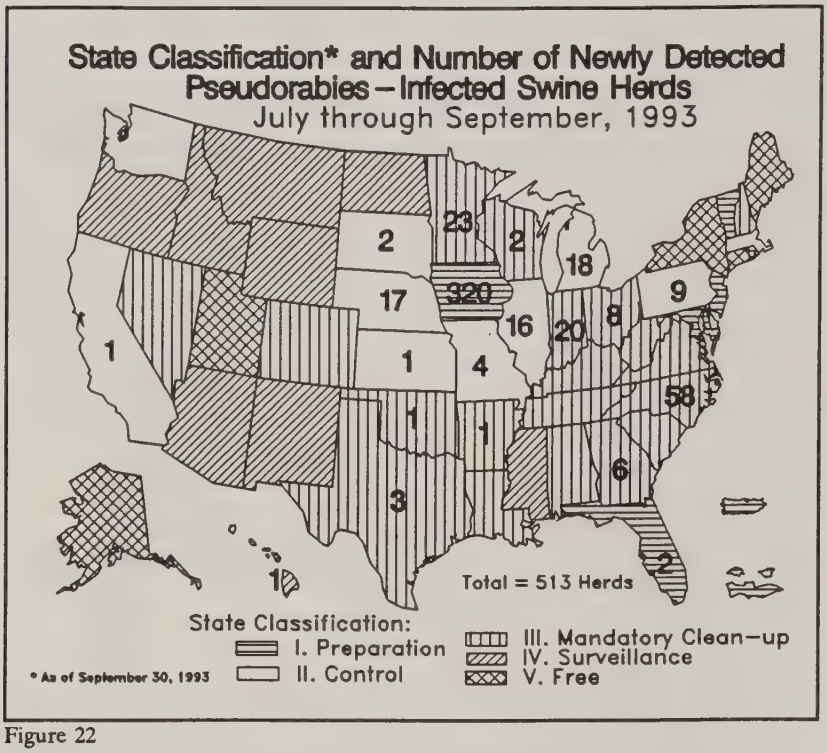

Figure 22

A total of 493 swine herds were detected with pseudorabies virus during the second quarter of 1993 and 513 herds during the third quarter of 1993 (Figure 22). The number of newly detected herds has increased over the last two quarters.

The most significant decreases from the second to the third quarters occurred in Indiana, Minnesota, and Florida, while the largest increases occurred in Iowa and North Carolina. Hawaii had one newly detected herd during the third quarter of 1993, the first since 1992.

Iowa now has 59.2 percent of all known PR-infected swine herds in the United States (3,999 out of 6,754). The total number of known infected herds in the U.S. decreased by 12.4 percent over the last year, from 7,707 to 6,754 (Figure 23). The total number in States other than Iowa decreased during the same period from 3,615 to 2,755.

The swine herd clean-up rate (herds in clean-up programs) has steadily increased for all States since 1990 (Figure 24). For the third quarter of 1993, the overall clean-up rate was 90 percent, with 6,091 of the known infected herds on clean-up plans. State classification changes include Arkansas, Kentucky, Louisiana, New Hampshire (Class III), Delaware, Indiana, North Dakota (Class IV), and New York (Class V).

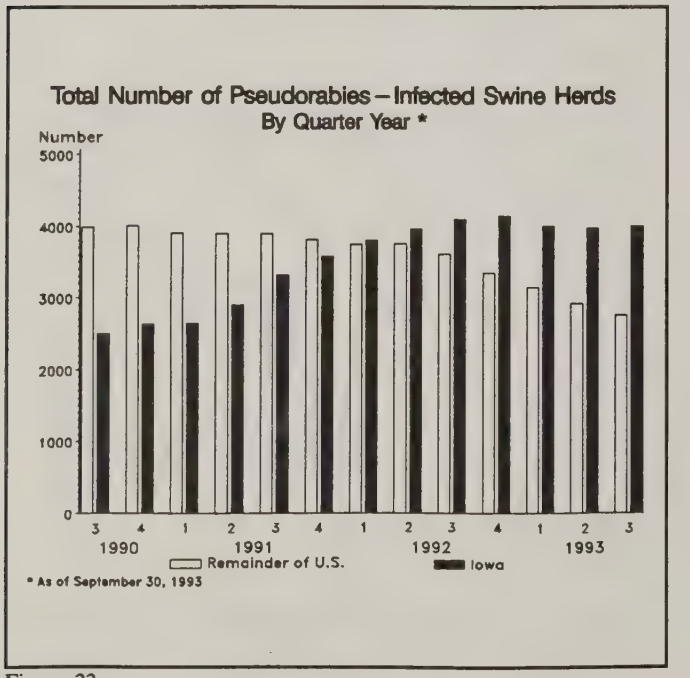

Figure 23

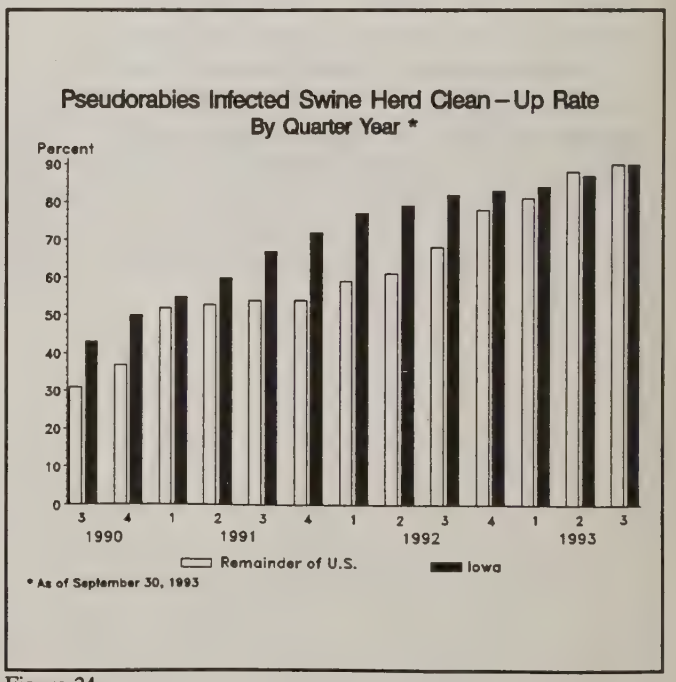

Figure 24

II. Etiologic Agents Associated with Bovine Abortion

Section II characterizes agents most commonly associated with bovine abortions (aborted fetuses or congenitally infected calves) from accessions reported to veterinary diagnostic laboratories.

Key to Figures in this Section:

- **The percents positive presented here are the number of positive accessions out of the total number of accessions tested and should not be interpreted as disease prevalence or incidence rates.**
- **In some cases, the denominator is a minimum because some laboratories were not able to determine the total number of negative tests performed.**
- **Data are presented by region or State of specimen origin and quarter year of specimen submission.**
- **See map on inside back cover for regions.**

☐ *Neospora* spp.

Criteria: Histopathology and detection of antigen by immunohistochemistry, or detection of antibody in aborted fetus by indirect FA.

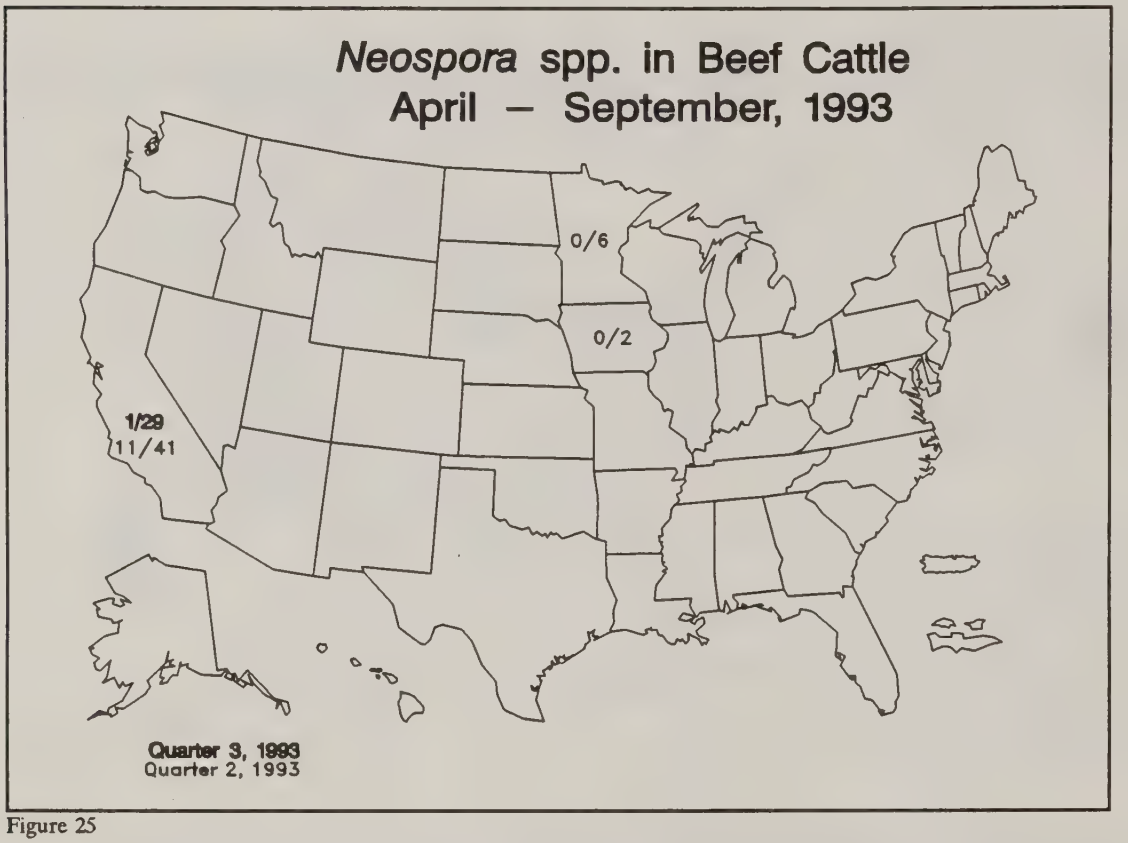

Figure 25

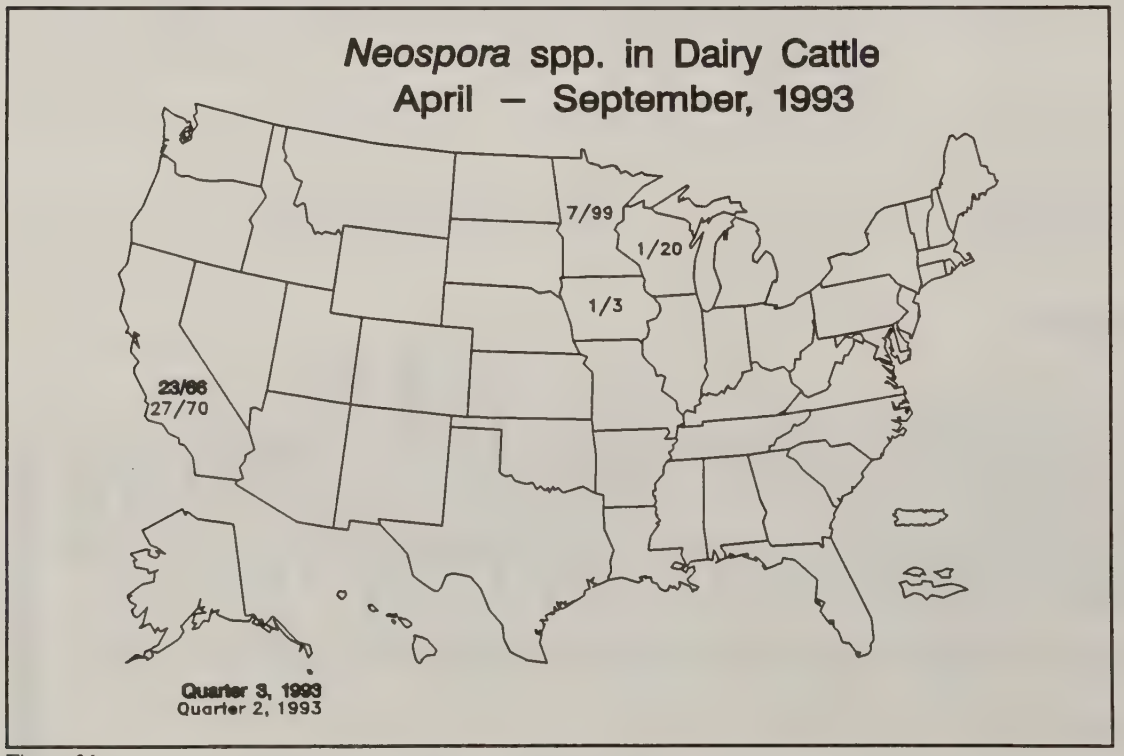

Figure 26

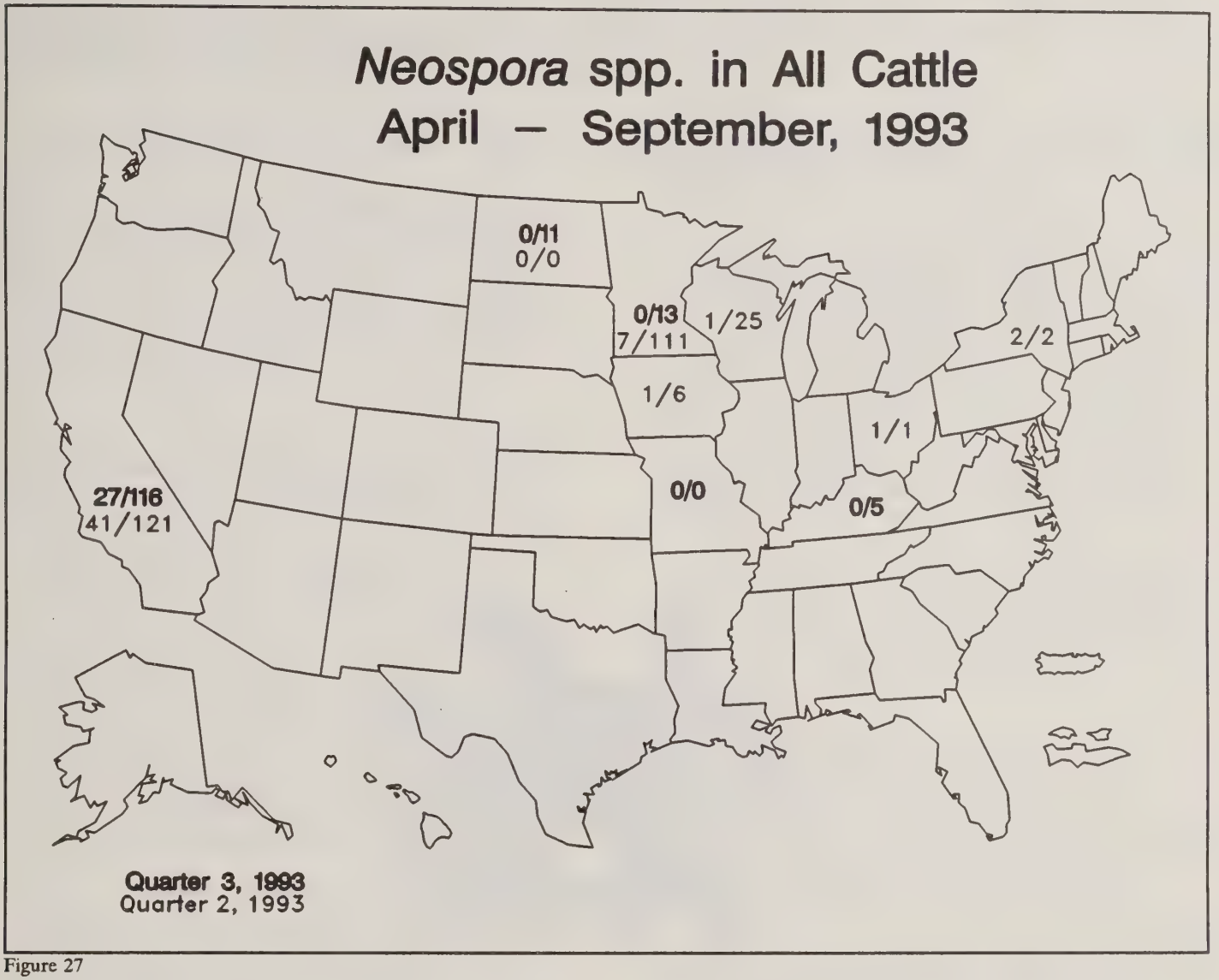

Figure 27

Figures 25 through 27 show the distribution of test results for *Neospora* spp. for the second and third quarters of 1993 by State. California was the only laboratory to report results by class of animal in the third qurter, with 1/29 (3.5 percent) beef and 23/66 (34.9 percent) dairy accessions testing positive. For all cattle, 27/145 (18.6 percent) accessions tested positive for *Neospora* spp. during the third quarter of 1993 (Figure 28).

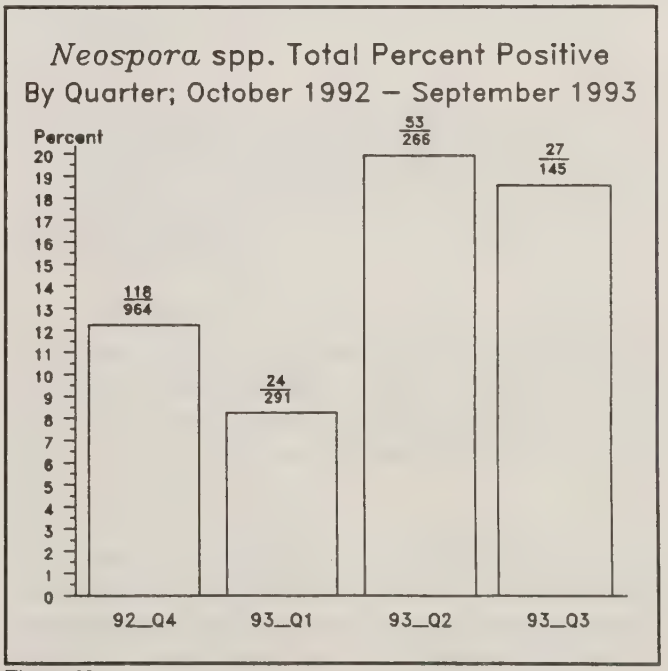

Figure 28

DxNEWS

This section contains news items and articles of potential interest to diagnostic laboratories. Submissions from nonparticipating laboratories are welcome.

The Mississippi River Flood of 1993

This report was originally disseminated throughout USDA:APHIS:Veterinary Services in July of 1993 to increase the awareness of possible conditions and events which may occur as a consequence of the 1993 flooding of the Mississippi River and its tributaries. Possible animal health effects, excerpted from that report, are presented here.

Anthrax. Anthrax epidemics can occur in association with marked climatic or ecologic changes such as flooding. Outbreaks are associated with neutral or alkaline soils that serve as 'incubator areas.' Anthrax spores apparently revert to the vegetative form and multiply to infectious levels when optimal environmental conditions of soil, moisture, temperature, and nutrition occur. Incubator areas are recognized in North Dakota, South Dakota, Nebraska, Arkansas, Mississippi, Louisiana, and Texas. Cases may occur as a single animal, or as outbreaks involving many animals. Sudden death with no apparent cause may be the only indicator of this disease. Personnel investigating cases of sudden death should practice extreme caution.

Botulism. Botulism intoxication may occur as a result of ingesting decaying carcasses or vegetable matter such as decaying grass, hay, and spoiled silage. Moist conditions also enhance the multiplication of larval stages of insects which can concentrate the toxins. Livestock may ingest contaminated feedstuffs or larvae if producers used damaged feedstuffs after recession of flood waters.

Blackleg. Cases of blackleg may occur. *Clostridium chauvoei* organisms remain viable in the soil for many years. Any disturbance to the soil such as excavations, dike formation, or flooding may be associated with outbreaks.

Erysipelas. Diamond skin disease, or Erysipelas, in hogs may occur. Anecdotal evidence suggests that recent flooding, hot humid conditions, and increased vectors, such as biting flies, can lead to outbreaks of Erysipelas in susceptible swine herds.

Leptospirosis. The route of infection for leptospirosis is usually waterborne. Flood waters may cause contamination or spread to humans, animals, and inoculation of surface water. The organism survives in surface water for extended periods of time, especially stagnant water.

Tularemia. Human tularemia cases are reported from most States, but are concentrated in a region surrounding the Ozark plateau, including the States of Arkansas, Missouri, Kansas, Oklahoma, and Illinois. Transmission can occur via direct contact with wild animals or a contaminated environment, biting insects, and water. Tularemia can survive for months in mud or moist environments. Wild animals serve as the reservoir. The possibility of transmission to livestock in flood situations is not well documented.

Equine Infectious Anemia. Equine infectious anemia is transmitted via infected blood cells. Transmission is usually by fomites or blood sucking vectors. Any increase in vectors as a result of flooding may lead to an increased incidence.

Encephalitis. Eastern and Western encephalitis virus may be transmitted by mosquitoes. St. Louis encephalitis virus may also be transmitted by mosquitoes, and wild birds and domestic fowl serve as reservoirs. An increase in mosquito vectors as a result of flooding may cause an increase in incidence.

Bluetongue. Bluetongue virus is transmitted by biting insects of the genus *Culicoides*. Any increase in vectors due to flooding may lead to an increase in incidence.

Rabies. Rabies virus is endemic primarily in the raccoons and skunks in the affected areas. Displacement of wildlife from their normal habitat caused by flooding may increase the number of rabid animal encounters.

Cryptosporidiosis. *Cryptosporidia* may be transmitted via water. Flood waters may cause contamination or spread to humans, animals, and inoculation of surface water. Contamination of water may occur from untreated human sewage or uncontrolled runoff from animal sources.

Mycotoxins. Mycotoxins are secondary fungal/mold metabolites. They are produced in the field or under storage when conditions are suitable for fungal/mold growth. Direct effects may be limited at this time, but

livestock may ingest contaminated feedstuffs if producers use damaged feedstuffs after the recession of flood waters.

[Dr. Charles Stoltenow, USDA:APHIS, Ft. Collins, CO, (303) 490-7800]

Update on Foreign Animal Disease

Swine Vesicular Disease. The Netherlands has been declared free from swine vesicular disease. The last outbreak was confirmed on October 28, 1992. All outbreaks were controlled by "stamping-out."

Porcine Reproductive and Respiratory Syndrome. The National Institute of Animal Health in Japan identified the antibody against PRRS in serum and isolated the virus from pigs with chronic pneumonia. Sero-surveillance is being carried out to determine the status of PRRS all over the country.

[USDA:APHIS Animal Health Update, Vol. 6(31), August 1993.]

African Swine Fever. A new outbreak of African swine fever in Spain resulted in the destruction of 700 pigs which had allegedly been brought into the area illegally.

Foot and Mouth Disease. Widespread outbreaks of foot and mouth disease on pig farms in several southern provinces of China have been confirmed. Pig farmers reportedly began slaughtering pigs in large numbers, but there has been no indication that quarantine measures have been implemented.

Newcastle Disease. Two new cases of Newcastle disease were detected in the Netherlands in late July and early August. These were the first cases since the end of March. Links have been made with poultry brought into the country from Belgium. Fresh outbreaks in Germany had brought the total up to 19 by the end of July. An outbreak originating from purchased, day-old chicks was reported from Austria at the end of June.

Classical Swine Fever. Seventy outbreaks had been reported in Germany by August 2 with five in the previous week.

[Animal Pharm, No. 281, July 30. 1993 and No. 282, August 13, 1993]

Free Data Submission Software Available

The DxMONITOR Data Submission System (DDSS) is available free of charge to any laboratory interested in participating in the Veterinary Diagnostic Laboratory Reporting System (VDLRS).

To use the DDSS, data must first be captured by a laboratory in whatever manner works best for that particular laboratory. The summary totals of those data are then entered into a data entry screen which is provided as part of the DDSS. A computer file is automatically created for use in transferring the data. A reference guide leads the user through this process. Because the system was written within a software package called "Epi Info", a copy of this program and a user's guide are also included. Epi Info was developed by the Centers for Disease Control and the World Health Organization. It has many capabilities including data analysis, word processing, statistics, etc. Please contact the address on the inside front cover of this issue for more information about the DDSS.

Lab Notes and DxNEWS Article Submissions are Encouraged

Readers of the DxMONITOR Animal Health Report are encouraged to submit items suitable for the "Lab Notes" and the "DxNEWS." All articles should be typed double spaced. Photos/artwork should be camera ready copy. If possible, please provide your article on diskette and indicate what type of software was used to create/store the file (i.e., WordPerfect, Word Star). Send submissions to the address on the inside front cover of this issue.

Materials available from the VDLRS are listed below. Send this clip-out order form to:

Veterinary Diagnostic Laboratory
Reporting System
USDA:APHIS:VS
555 South Howes, Suite 200
Fort Collins, CO 80521-2586

Quantity

_____ **DxMONITOR Animal Health Report***
(Quarterly report of VDLRS data)

_____ **Introduction to the VDLRS**
(An informational brochure)

_____ **Report of the 1991 DxMONITOR Committee Meeting** (August 1991)

* The most recent issue of the DxMONITOR will be sent. If you want past issues, please call (303) 490-7800.

Name:_____

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☐ Please add my name to the mailing list for the DxMONITOR Animal Health Report.

Appendix

This section provides tables displaying the most recently reported diagnostic laboratory data.

Key to Tables in this Section:

- Data are presented by laboratory of specimen origin and quarter of specimen submission. Because individuals within a State may utilize outside laboratories in addition to their own, the State numbers presented in the State maps may not agree with the numbers presented by reporting laboratory in the appendix.
- Values represent the number of positive tests or accessions (P) and the number of tests performed or accessions tested (T).
- Values reported in the "TOT" category represent all tests performed during the quarter This category may include some tests for which a month of specimen submission was not known. Therefore, the sum of the quarterly values may not be equal to the "TOT" values.
- Data totals (positives and total tests) shown for "All Calves" include specimens of unknown bovine class and those from veal calves, in addition to specimens from beef or dairy calves. Thus, the sums of dairy calf totals and beef calf totals do not always equal the totals shown for all calves.
- Values reported for all diagnoses/agents are for quarters in 1992 and 1993.
- In some cases, the reported total number of tests performed is a minimum because some laboratories were not able to determine the total number of negative tests performed.
- Abbreviations for laboratories used in the tables are:

ARVDL = Arkansas	CAVDL = California	FLVDL = Florida	GAATH = GA, Athens
GATFT = GA, Tifton	IAVDL = Iowa	KYMSU = KY, Hopkinsville	KYVDL = KY, Lexington
MNDVL = Minnesota	MOVDL = Missouri	NDVDL = North Dakota	NEVDL = Nebraska
NMVDL = New Mexico	NVSL = National	NYVDL = New York	OHVDL = Ohio
OKVDL = Oklahoma	ORVDL = Oregon	PRVDL = Puerto Rico	SCVDL = South Carolina
SDVDL = South Dakota	TNVDL = Tennessee	TXVDL - Texas	VAVDL = Virginia
WYVDL = Wyoming			

Bovine Leukosis Virus

		Beef					Dairy					Total				
		|----	Quarter	---- |			|----	Quarter	---- |			|----	Quarter	---- |	
Lab		4/92	1/93	2/93	3/93	TOT	4/92	1/93	2/93	3/93	TOT	4/92	1/93	2/93	3/93	TOT
ARVDL	P		18	22	35	75		8	7	17	32	37	32	36	77	182
	T		31	42	82	155		12	14	28	54	249	54	91	168	562
CAVDL	P												61	130	117	308
	T												277	438	342	1007
FLVDL	P	3	5	6	30	44	19	44	27	27	117	22	49	33	57	161
	T	87	74	33	719	913	44	84	41	52	221	131	158	74	771	1134
GAATH	P											14	6	70	14	104
	T											43	29	119	45	236
GATFT	P											138	238	3092	74	3542
	T											265	509	5100	158	6032
KYMSU	P											119	77		62	258
	T											239	163		144	546
KYVDL	P											63				63
	T											160				160
MNVDL	P											98	103	119		320
	T											370	354	407		1131
MOVDL	P											18	32	10	20	80
	T											228	520	275	250	1273
NDVDL	P											71	95	51	58	275
	T											306	35	242	147	529
NVSL	P											5	0	19	0	24
	T											25	51	254	8	338
NYVDL	P											634	820	514	391	2359
	T											4610	5127	4638	2302	16677
OHVDL	P												677	468	359	1504
	T												2103	1848	1311	5262
OKVDL	P		156	10	59	225		37	3	24	64	276	280	13	87	656
	T		349	37	137	523		48	3	38	89	511	515	40	197	1263
PRVDL	P													2		2
	T													20		20
TNVDL	P												22		91	113
	T												47		167	214
TXVDL	P											425	311	343	128	1207
	T											1914	1249	1125	1232	5520
VAVDL	P		2	104	31	137	37	57	22	10	126	96	81	134	41	352
	T		20	370	153	543	202	172	58	40	472	521	236	454	193	1404

Paratuberculosis by Culture, Histopathology, or DNA Probe

Lab		Bovine 3/92	Bovine 4/92	Bovine 1/93	Bovine 2/93	Bovine TOT	Ovine 3/92	Ovine 4/92	Ovine 1/93	Ovine 2/93	Ovine TOT	Caprine 3/92	Caprine 4/92	Caprine 1/93	Caprine 2/93	Caprine TOT
		|---- Quarter ---- |					|---- Quarter ---- |				|---- Quarter ---- |				
ARVDL	P		4	4	1	9										
	T		10	6	5	21										
CAVDL	P	3	5	1		9							0			0
	T	107	30	121		258							1			1
FLVDL	P	28		16	32	76						0		0	1	1
	T	76		48	72	196						2		2	2	6
GAATH	P	2		4		6										
	T	2		30		32										
GATFT	P	0		0		0										
	T	2		5		7										
KYMSU	P	30	20	7	11	68										
	T	103	293	17	45	458										
KYVDL	P		19			19										
	T		50			50										
MNVDL	P	5	19	82	12	118				0	0		0		0	0
	T	.	168	249	22	439				2	2		1		2	3
MOVDL	P		4	2	4	10										
	T		29	35	20	84										
NDVDL	P	2	2	4	1	9										
	T	2	2	4	.	8										
NVSL	P		9	3	5	17							1	0	0	1
	T		157	20	198	375							12	1	2	15
NYVDL	P	209	255	399	111	974	0		0	0	0	54	1	2	0	57
	T	2038	2757	4334	1562	10691	2		3	8	13	192	13	20	3	228
OHVDL	P		76	89	70	235		0	0	0	0		1	0	0	1
	T		655	941	661	2257		1	2	5	8		1	1	2	4
SDVDL	P	10		2	12	24				1	1					
	T	108		3	25	136				1	1					
VAVDL	P	18	0	0	1	19										
	T	157	15	17	9	198										

Appendix

Paratuberculosis by Serology

		Bovine					Ovine					Caprine				
		|---- Quarter ---- |					|---- Quarter ---- |				|---- Quarter ---- |				
Lab		4/92	1/93	2/93	3/93	TOT	4/92	1/93	2/93	3/93	TOT	4/92	1/93	2/93	3/93	TOT
CAVDL	P			16		16			1		1			0		0
	T			144		144			4		4			5		5
GAATH	P	4			6	10										
	T	39			23	62										
GATFT	P	6			3	9										
	T	37			19	56										
KYMSU	P			15	45	60										
	T			20	162	182										
MNVDL	P	61		82		143			1		1	0		0		0
	T	197		214		411			1		1	2		46		48
NYVDL	P			44	18	62			1	1	2			2	0	2
	T			246	52	298			7	4	11			37	8	45
OHVDL	P			9	21	30										
	T			302	289	591										
OKVDL	P	3	1	0	2	6										
	T	38	40	320	38	436										
PRVDL	P		2	0		2										
	T		6	5		11										
TNVDL	P			8	21	29										
	T			135	120	255										
VAVDL	P	10		13	10	33										
	T	55		23	34	112										

Equine Viral Arteritis

Lab		Quarter 4/92	1/93	2/93	3/93	TOT
CAVDL	P	12	11	7	4	34
	T	156	398	233	260	1047
FLVDL	P	13	9	1	16	39
	T	414	738	430	540	2122
GAATH	P	2	2	0		4
	T	15	10	14		39
GATFT	P	0	0	0		0
	T	8	19	7		34
KYVDL	P	90				90
	T	2773				2773
NMVDL	P				0	0
	T				40	40
NVSL	P		40	8	43	91
	T		121	58	332	511
NYVDL	P	53	34	28	51	166
	T	535	471	347	938	2291
VAVDL	P	0	0	0	0	0
	T	11	48	25	37	121

Porcine Reproductive and Respiratory Syndrome Virus

Lab		Quarter 4/92	1/93	2/93	3/93	TOT
CAVDL	P			10	0	10
	T			30	1	31
GAATH	P		9		12	21
	T		21		262	283
KYMSU	P				8	8
	T				40	40
MNVDL	P	750	1309	994		3053
	T	2633	3217	2554		8404
MOVDL	P			1	6	7
	T			5	31	36
NVSL	P	1407	1749	981	204	4341
	T	7221	7201	2601	945	17968
SDVDL	P		161		972	1133
	T		980		2064	3044

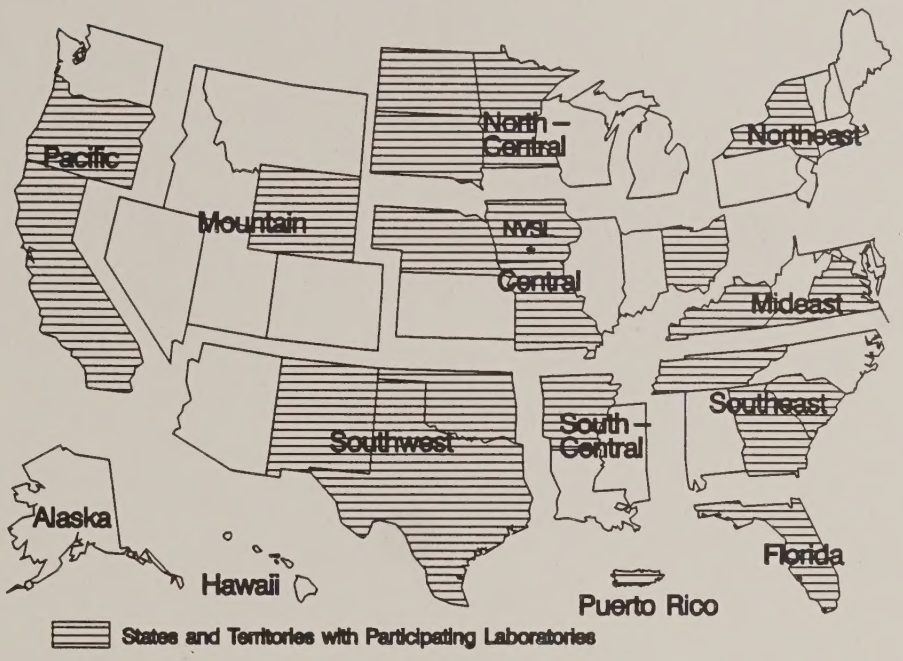
Neospora spp.

Lab		Beef Quarter 4/92	1/93	2/93	3/93	TOT	Dairy Quarter 4/92	1/93	2/93	3/93	TOT	Total Quarter 4/92	1/93	2/93	3/93	TOT
CAVDL	P		1	11	1	13		14	27	23	64		19	41	27	87
	T		27	41	29	97		54	70	66	190		96	121	116	333
KYMSU	P														0	0
	T														5	5
MNVDL	P	0	0	0		0	7	5	9		21	7	5	9		21
	T	4	49	8		61	116	125	122		363	133	195	142		470
MOVDL	P														0	0
	T														0	0
NDVDL	P													0	0	0
	T													.	24	24
NYVDL	P													2		2
	T													.		.
OHVDL	P												0	1		1
	T												.	.		.

REGIONS OF THE VDLRS

Abbreviations for regions used in this issue are:

AK = Alaska
CL = Central
FL = Florida
HI = Hawaii
ME = Mideast
MN = Mountain
NC = North-Central
NE = Northeast
PA = Pacific
PR = Puerto Rico & U.S. Virgin Islands
SC = South-Central
SE = Southeast
SW = Southwest
UNK = Unknown



Contributing Laboratories

The following laboratories have contributed data reported in the DxMONITOR Animal Health Report. Thanks to all of the individuals at these laboratories who have worked to make this report possible.

- Arkansas Livestock and Poultry Commission Diagnostic Laboratory (Little Rock, AR)
- California Veterinary Diagnostic Laboratory System (Davis, CA)
- Bureau of Diagnostic Laboratories, Florida Department of Agriculture (Kissimmee, FL)
- Veterinary Diagnostic Laboratory, University of Georgia (Athens, GA)
- Veterinary Diagnostic and Investigational Laboratory, University of Georgia (Tifton, GA)
- Veterinary Diagnostic Laboratory, Iowa State University (Ames, IA)
- National Veterinary Services Laboratories (Ames, IA)
- Breathitt Veterinary Center, Murray State University (Hopkinsville, KY)
- Livestock Disease Diagnostic Center, University of Kentucky (Lexington, KY)
- Minnesota Veterinary Diagnostic Laboratory, University of Minnesota (St. Paul, MN)
- Veterinary Medical Diagnostic Laboratory, University of Missouri-Columbia (Columbia, MO)
- Veterinary Diagnostic Center, University of Nebraska-Lincoln (Lincoln, NE)
- Veterinary Diagnostic Services, New Mexico Department of Agriculture (Albuquerque, NM)
- New York State Veterinary Diagnostic Laboratory, Cornell University (Ithaca, NY)
- North Dakota Veterinary Diagnostic Laboratory, North Dakota State University (Fargo, ND)
- Reynoldsburg Laboratory, Ohio Department of Agriculture (Reynoldsburg, OH)
- Oklahoma Animal Disease Diagnostic Laboratory, Oklahoma State University (Stillwater, OK)
- Veterinary Diagnostic Laboratory, Oregon State University (Corvallis, OR)
- Puerto Rico Animal Diagnostic Laboratory (Dorado, PR)
- Clemson Diagnostic Laboratory, Clemson University (Columbia, SC)
- Animal Disease Research and Diagnostic Laboratory, South Dakota State University (Brookings, SD)
- C.E. Kord Animal Disease Diagnostic Laboratory, Tennessee Department of Agriculture (Nashville, TN)
- Texas Veterinary Medical Diagnostic Laboratory, Texas A&M University (College Station, TX)
- Bureau of Laboratory Services, Virginia Department of Agriculture and Consumer Services (Richmond, VA)
- Wyoming State Veterinary Laboratory (Laramie, WY)

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